seems to be attained at ordinary illumination. This seems to indicate that even the green areas of infected leaves are permanently immune to the variegation. Both in blue and in red light plants retained their variegation.

BAUR has extended his investigations to other variegated plants and finds that infectious chlorosis is of widespread occurrence. Both true variegation and the infectious form may occur in varieties of the same species. Among the forms investigated, a variety of *Ligustrum vulgare L.* and one of *Laburnum vulgare* (Griseb.) owed their variegation to infectious chlorosis similar to that of *Abutilon Thompsoni*, Hort.—H. HASSELBRING.

Hydrocyanic acid in plants.—GUIGNARD has been giving special attention to plants which contain glucosides that produce this acid, and the conditions under which they may become poisonous. He relates in one paper[7] the cases of poisoning from the use of beans derived from wild or subspontaneous forms of *Phaseolus lunatus* L., a species having many forms, of which our Lima bean is one. In cultivation these are generally quite innocuous, but all contain phaseolunatin in greater or less quantity, which is split by emulsin into glucose, acetone, and hydrocyanic acid. The beans from Java have proved most virulent. A botanical and chemical history of the species is given, with illustrations of the seeds of many varieties. A new, convenient, and certain mode of detecting the acid is proposed. Filter paper is moistened with 1 per cent. picric acid and dried, then moistened with 10 per cent. sodium carbonate and dried, in which state it keeps its sensitiveness several months. A strip suspended in a test tube containing $0.02–0.05^{mg}$ HCN becomes red-orange in 12–24 hours.

In other papers[8] Guignard notes the presence of a cyanogenetic compound in *Sambucus nigra* L., *Ribes rubrum* L., *R. aureum* Pursh., where it is found in the fresh leaves from vigorous shoots, green fruits, and young bark of the stem, while traces appear elsewhere. The compound is probably a glucoside that is split by emulsin, which accompanies it and does not seem to be a reserve food.[9]

Emulsin he reports in the aerial roots of a considerable number of exotic and indigenous orchids,[10] and also in certain yeasts[11] (resembling *Sac. Pastorianus* Hansen). This has also been announced by HENRY and AULD.[12]

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7 GUIGNARD, L., Le haricot à acide cyanhydrique (*Phaseolus lunatus* L.). Revue de Viticulture **1906**. *col. pl. 1. figs. 9.*

8 ———, Sur l'existence, dans le sureau noir d'un composé fournissant de l'acide cyan-hydrique. Bull. Sci. Pharmacol. **12** and **13**. 1905–6.

9 ———, Nouvelles observations sur le formation et les variations quantitatives du principe cyanhydrique de sureau noir. *Idem.* See also announcements in Compt. Rend. Acad. Sci. Paris June 3, July 24, Sept. 4, Dec. 26, 1905.

10 ———, Quelques faits relatifs à l'histoire de l'émulsine; existence générale de ce ferment chez l'Orchidées. *L. c.* footnote 8.

11 ———, Secretion d'émulsine par les levures. *L. c.*

12 Proc. Roy. Soc. B. **76**:568. 1905.

In the latest note[13] GUIGNARD adds a considerable number of Rosaceae, of the tribes Pruneae and Spiraeae, whose leaves and other parts furnish hydrocyanic acid.—C. R. B.

Sexuality of the Uredineae.—In 1904 BLACKMAN[14] showed that a peculiar process of fertilization occurs in the aecidium of *Phragmidium violaceum*, by which a nucleus from a vegetative cell of the mycelium migrates into a fertile cell, and thus brings about the condition of paired nuclei found by SAPPIN-TROUFFY[15] to be quite universal in the teleutospore-bearing mycelium. Two questions naturally arise as a result of this work. First, since the aecidium of *P. violaceum* is of a special type, how far will this process of fertilization be found to explain the origin of conjugate nuclei in aecidia generally? Second, what process takes place in those forms which have no aecidium? Both of these questions BLACKMAN and FRASER[16] attempt to solve in a later contribution to the cytology of the Uredineae. In *Uromyces Poae* Raben. and *U. Poarum* Neil., both of which are *eu*-forms with typical aecidia, the migration of nuclei from one vegetative cell to another was observed in the tissue of the aecidium. These migrations were not so easily distinguished as in *P. violaceum*. In *Melampsora Rostrupi* Wagn., which has aecidia of the caeoma type, no fertilization was discovered, but there were some evidences that fertilization took place in the manner described by CHRISTMAN for *Phragmidium speciosum*. In *Puccinia Malvacearum* Mont., a *lepto*-form, the change from uninucleate to binucleate cells takes place in the hyphae of the teleutosorus, but the exact method could not be determined; neither could the transition be made out in the *micro*-forms *P. Adoxae*, D. C., *U. Scillarum* Wint., and *U. Ficariae* Lév.—H. HASSELBRING.

The filiform apparatus.—Striations on the micropylar portion of synergids were described in 1856 by SCHACHT, who called them "fertilization threads" (*Befruchtungsfaden*); HOFMEISTER gave the name "filiform apparatus" (*Fadenapparat*); STRASBURGER in 1882 believed the lines or threads consisted of fine pores. A paper by HABERMANN[17] now brings modern technic and modern lenses to bear upon the subject. The filiform apparatus, more or less developed, is characteristic of angiosperms generally. The apparatus arises by the transfor-

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13 ———, Nouveaux exemples de Rosacées à acide cyanhydrique. Compt. Rend. Acad. Sci. Paris **143**:451. Oct. 1. 1906.

14 BLACKMAN, V. H., On the fertilization, alternation of generations, and general cytology of the Uredineae. Annals of Botany **18**:323–373. *pls. 21–24.* 1904.

15 SAPPIN-TROUFFY, P., Recherches histologiques sur la famille des Uredinées. Le Botaniste **5**: 59–244. *figs. 68.* 1896–7.

16 BLACKMAN, V. H., and FRASER, MISS H. C. I., Further studies on the sexuality of the Uredinaceae. Annals of Botany **20**:35–48. *pls. 3–4.* 1906.

17 HABERMANN, ALFRED, Der Fadenapparat in den Synergiden der Angiospermen. Beih. Bot. Centralb. **20**:300–317. *pl. 13.* 1906.